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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,648	04/20/2005	Roland Muenzberg	740116-565	7132
25570	7590	10/31/2006	EXAMINER	
ROBERTS, MLOTKOWSKI & HOBBS			PATEL, ISHWARBHAI B	
P. O. BOX 10064			ART UNIT	
MCLEAN, VA 22102-8064			PAPER NUMBER	
			2841	

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/528,648

Applicant(s)

MUENZBERG, ROLAND

Examiner

Ishwar (I. B.) Patel

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-19 is/are pending in the application.
- 4a) Of the above claim(s) 16-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/21/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 11-15, drawn to a circuit board, classified in class 174, subclass 255.

Group II, claim(s) 16-19, drawn to a process for producing rigid-flexible circuit boards, classified in class 29, subclass 832+.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical features of group I include at least on rigid area, at least one flexible area and an adhesive medium with a recess in the flexible areas. In contrast, the special technical feature of group II include the step of applying an uncured insulating layer to one side of the copper foil in the flexible are, curing the insulating layer and following the same steps for the rigid area.
3. During a telephone conversation with David S. Safran (Reg. 27,997) on October 3, 2006 a provisional election was made without traverse to prosecute the invention of

group I, claims 11-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-19 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Should applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103 (a) of the other invention.

Priority

4. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been received and placed of record in the file.

Drawings

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the multilayer board with several rigid individual layers, as claimed in claim 15, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The abstract of the disclosure is objected to because the abstract refers to the prior art reference numeral "9" which is not a part of the invention. Correction is required. See MPEP § 608.01(b).

7. The disclosure is objected to because of the following informalities: "copper foil 9" should be - -copper foil 8 - - , page 9, paragraph [0031], line 9.

Appropriate correction is required.

Claim Objections

8. Claim 13 is objected to because of the following: Claim 13 depends upon a cancelled claim 1. For the examination purpose, it is assumed to be dependent upon claim 11, considering that to be a typographical mistake. Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

10. Claims 11-15 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such

omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are:

Regarding claim 11, the claim language is unclear and does not show the cooperative relationship between the elements to be able to understand the final structure of the board. Such as, the recitation “at least one rigid area, at least one flexible area, a rigid individual layer and “at least one copper layer along with an insulation layer applied to it”, does not clearly show the structural interrelationship between each other and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claims 12-15 depend upon claim 11 and inherit the same deficiency.

Prior art applied to the extent it is understood by the examiner.

11. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

Regarding claim 11, the phrase “wherein the rigid area there being no flexible individual layer between the adhesive medium and the at least one copper foil in the flexible area,” is unclear and confusing. Also, the claim as a whole appears to be a literal translation from a foreign language with no relative continuity between the phrases and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claims 12-15 depend upon claim 11 and inherit the same deficiency.

Prior art applied to the extent it is understood by the examiner.

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by kober (US Patent No. 5,144,534).

Regarding claim 11, Kober, in figure 7, discloses circuit board, comprising: at least one rigid area (both sides of the slot 2), at least one flexible area (area in the slot 2), a rigid individual layer (1) which is provided with printed conductors or is copper-clad on at least one side (21), an adhesive medium (adhesive 7 applied on rigid layer 1, column 5, line 6-13), and at least one copper foil (22); wherein the rigid area there being no flexible individual layer between the adhesive medium and the at least one copper foil in the flexible area (see figure 4, no flexible individual layer between the adhesive medium and the copper foil), an insulating layer being applied directly to an inner side of the copper foil (insulating layer 7, column 5, line 49-51), wherein the adhesive medium has recesses in the flexible area (see figure 7, the adhesive medium 7 has a recess in the flexible area), wherein, in the flexible area, there is no flexible individual layer between the rigid individual layer and the copper foil (see figure 7, there is no flexible individual layer between the rigid layer and the copper foil) and wherein the insulating layer is a resist applied to copper foil (as insulating layer comprise epoxy resin).

Regarding claim 12, Kober further discloses the resist is a flexible solder resist (the insulating layer 7 applied to foil 22 is made of epoxy resin, as applied to claim 11 above and is flexible as it is in the flexible area).

Regarding claim 13, Kober further discloses at least in the flexible area, another insulating layer is applied to the outer side of the copper foil (9, figure 7).

Regarding claim 14, Kober further discloses the other insulating layer is a resist, which has been applied to the copper foil (column 6, line 6-10).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kober as applied to claim 1 above.

Regarding claim 15, Kober discloses all the features of the claimed invention including the rigid layer with at least one printed conductor as applied to claim 1 above, but does not disclose several of the such rigid individual layer forming a multilayer circuit board. However, multilayer circuit board with several rigid layers is old and known

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in the art for increasing the wiring density and the resultant component mounting density. Further, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 and *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant invention to provide the board of Kober with several individual rigid layer forming a multilayer circuit board by providing multiple of that provided in claim 11, in order to increase the wiring density and the component mounting density of the board.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Seiichi Kitazawa (Japanese Patent No. JP408134331A) discloses use of epoxy resin as a flexible solder resist.

Higuchi (US Patent No. 6,818,989) in figure 9 discloses a solder resist layer (2) on wiring pattern (3).

Uedo (US Patent No. 5,516,989) in figure 1 discloses a recess (12) in the adhesive film in the bent flexible area.

Edwin (US Patent No. 5,262,594) in figure 3 discloses a rigid flex printed circuit board.

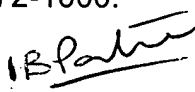
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (571) 272 1933. The examiner can normally be reached on M-F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on (571) 272 1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ibp
October 29, 2006


Ishwar (I. B.) Patel
Primary Examiner